DRIVER PROGRAM PROCEDURES

DVR10

DOS AND RTE CALCOMP PLOTTER DRIVER

AND

BCS CALCOMP PLOTTER DRIVER D.10 (20014-60001)

HP Order Nos. HP 20581 (DOS), HP 20808 (RTE) (current version)

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Small Programs Manual
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DOS AND RTE CALCOMP PLOTTER DRIVER HP DVR10

The DOS and RTE Calcomp Plotter Driver (HP DVR10) controls output of plot data codes to the Calcomp Model 565 Plotter with 0.010 inch increments. The HP 12560-6001 Interface Kit is the required interface. The Real-Time and DOS versions of the driver must conform to the specifications and constraints defined for the respective systems. See the Real-Time Software (HP 02116-9139) and Disc Operating System (HP 02116-91748) Manuals.

Note that the Plotter Library routine, PLOT, generates the proper data codes for a plotter operation and issues the write call to the operating system. Other Plotter Library routines perform plotter utility functions by calling the PLOT routine.

DRIVER ORGANIZATION

The driver does not use a DMA channel for transmission to the plotter. Therefore, there is no DMA channel specified in the EQT entry table at system generation.

An interrupt entry must be made for plotter-driver usage due to program control of data transfer and the interrupt response after each character is transferred.

The plotter interface between the PLOT routine and DVR10 has a unique structure for the data buffer and plotter codes (see "Data Format"). Any direct user WRITE calls to the plotter must conform to this defined interface structure. All calls to the plotter should be made through the PLOT routine.

In a RTE environment, output buffering for the plotter and DVR10 is specified during configuration if this feature is desired by the user.

DVR10 is structured to accomodate concurrent plotter operations if required by user programs. See the description of the PLTLU entry point in the "Plotter Library for RTE and DOS."

USER CALLING SEQUENCE

The only I/O request defined for the plotter is the WRITE request. The READ request is illegal and there are no functions defined for a CONTROL request.

WRITE Request

```
                EXT     EXEC
                 :
(P)             JSB     EXEC
(P+1)           DEF     *+5
(P+2)           DEF     RCODE       (Define WRITE)
(P+3)           DEF     CONWD       (Define request control word)
(P+4)           DEF     BUFFER      (Define buffer location)
(P+5)           DEF     BUFFL       (Define buffer length)
                ___                 (Return point)
```

DATA FORMAT

DVR10 outputs plot codes to the interface. The PLOT routine generates the Plot codes that perform incremental steps from point-to-point and raise or lower the plotter pen.

The plotter interface accepts 6-bit codes representing the functions. With the exception of octal 20 (pen up) and octal 40 (pen down), the functions are contained within 4 bits (codes 03 and 07 are not defined). Therefore, the codes are packed in the buffer by PLOT as four 4-bit functions per word. Pen up is defined as 03 and pen down as 07. The driver converts the 03 to octal 20 and the 07 to octal 40 before output to the interface.

A zero code anywhere within a buffer word signals the end of plot codes and terminates the operation. The codes are left-justified within the word.

BCS CALCOMP PLOTTER DRIVER D.10 (20014-60001)

To include D.10 in your BCS system, follow the instructions for using the Prepare Control System program in Section V of the Basic Control System manual, part number 02116-9017.

Once D.10 is included in your system, your programs can issue requests to the plotter through calls to the subroutines in the plotter library (if the librar is included in your system) and calls to .IOC. (if you wish to use D.10 for write and clear requests to the plotter).

Instructions for using the plotter library calls are documented in Relocatable Subroutines, part number 02116-91780. Instructions for issuing assembly language calling sequences to .IOC. are described in the following paragraphs.

WRITE CALLING SEQUENCE

This calling sequence outputs a series of plot codes to the plotter, if succes if unsuccessful, it returns an error condition to an error-processing address your program. The format is:

```
EXT    .IOC.                    (declared once as an external)
.
.
JSB    .IOC.                    (jump to .IOC.)
OCT    0200unit-reference       (code includes unit reference of plotte
JMP    (address)                (your error return processing address)
DEF    (address)                (your output buffer address for plotter
DEC    nnnn                     (length of output buffer, in words)
(next instruction)              (.IOC. returns here upon successful com
                                      pletion of calling sequence)
```

Note that each word in the output buffer contains four plot codes (bits 15-12= first code); that data is left-justified (with any remaining bits set to zero); that a plot code of zero terminates the data transfer; and that the D.10 driver decodes plot code 03 to 20, plot code 07 to 40.

CLEAR CALLING SEQUENCE

This calling sequence clears the plotter and D.10. The format is:

```
EXT    .IOC.                    (declared once as an external)
.
.
JSB    .IOC.                    (jump to .IOC.)
OCT    0000unit-reference       (code includes unit reference of plotter)
(next instruction)              (.IOC. returns here)
```